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ORAL PRESENTATION

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Insulin resistance, subclinical left ventricular remodeling, and the obesity paradox: the multi-ethnic study of atherosclerosis

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Background

Recent studies suggest that central obesity and insulin resistance may be primary mediators of obesity-related cardiac remodeling independent of body mass index (BMI). We assessed in the Multi-Ethnic Study of Atherosclerosis (MESA) whether insulin resistance and waist-to-hip ratio had effects on cardiac remodeling, independent of obesity.

Methods

We investigated 4,364 individuals without diabetes in MESA. Insulin resistance (by impaired fasting glucose, IFG: 100-125 mg/dl or homeostatic model assessment of insulin resistance, HOMA-IR) and waist-to-hip ratio (WHR) were used for cardiometabolic phenotyping. Multivariate linear regression analysis was used to determine

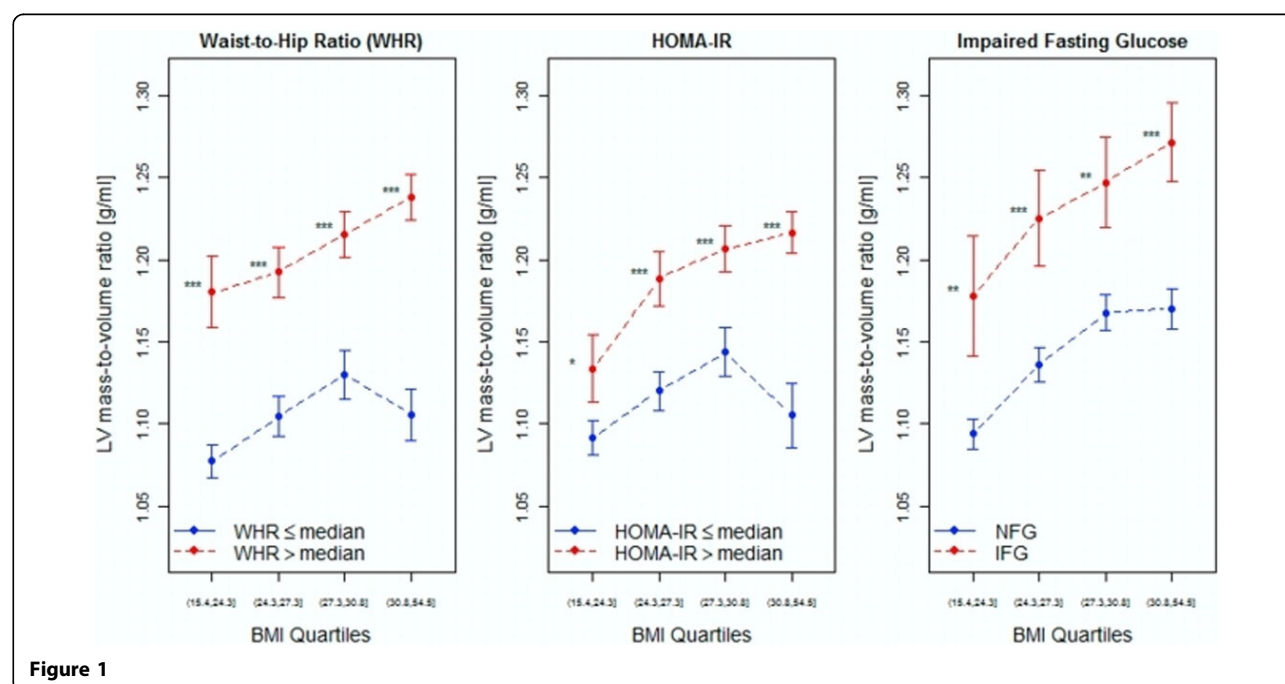


Figure 1

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the effects of the cardiometabolic markers on LV remodeling, assessed primarily through the LV mass-to-volume ratio obtained by cine cardiac magnetic resonance imaging.

Results

Individuals with IFG were more likely to be older, hypertensive, with increased prevalence of cardiometabolic risk factors regardless of BMI. In each quartile of BMI, individuals with above-median HOMA-IR, above-median WHR, or IFG had a higher LV mass-to-volume ratio ($p < 0.05$ for all). HOMA-IR ($p < 0.0001$), WHR ($p < 0.0001$), and the presence of IFG ($p = 0.04$), but not BMI ($p = 0.24$), were independently associated with LV mass-to-volume ratio after adjustment for age, gender, hypertension, race, and dyslipidemia.

Conclusions

Insulin resistance and waist-to-hip ratio are associated with concentric LV remodeling independent of BMI. These results support the emerging hypothesis that the cardiometabolic phenotype, defined by insulin resistance and central obesity, may play a critical role in LV remodeling independently of BMI.

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